Changes to the 2005 King County Surface Water Design Manual (KCSWDM) necessary in order to attain the status of equivalence to Ecology's 2005 Stormwater Management Manual for Western Washington and comply with certain Phase I Municipal Stormwater Permit requirements.

CHAPTER 1: DRAINAGE REVIEW AND REQUIREMENTS

Definitions

Replaced Impervious Surface

Both references to ATB in the definition of "replaced impervious surface" should be deleted.

Transportation Redevelopment Project

The revised KCSWDM will clarify that Transportation Redevelopment Project exemptions are not allowed for roads that are part of a subdivision project.

Projects Requiring Drainage Review, Section 1.1.1

Thresholds

The applicability of the requirements equivalent to Ecology's M.R. 1 – 5 must be based upon project-wide thresholds, not just the threshold discharge area. The footnotes at the bottom of pages 1-9, 1-13 and 1-16 should be deleted.

The thresholds are to be based upon the new and replaced impervious surfaces of the project rather than just new impervious surfaces.

Small Project Drainage Review, Section 1.1.2.1

Treatment Thresholds

Use the language in Mitigation of Water Quality Impacts for Large Lots (C.1.3.2.C) for Small Lots (C.1.3.1.C).

Small Project Drainage Review Thresholds

The thresholds required by the Phase I Permit (Appendix 1) are based upon a 0.10 cfs increase in the 100-year return flow based on 1-hour time steps. KC must use Ecology's default thresholds or thresholds based upon 0.10 cfs. For example, the first bulleted threshold in this section is not approvable.

Large Project Drainage Review, Section 1.1.2.4

Scope of Requirements

Remove the statement that "experimental facilities may be pursued without additional adjustments," which will result in a separate approval process for experimental facilities.

Core Requirement #3: Flow Control, Section 1.2.3

Exemptions from Core Requirement #3

Basic Exemption

Revise the thresholds to comply with the Phase I Permit (Appendix 1) thresholds. Projects that exceed 2,000 sf of new and replaced impervious surfaces are not exempt from the requirement to apply flow control BMPs. New pervious surface between 7,000 and 35,000 sf must meet the soil quality and depth BMP.

Cost Exemption for Parcel Redevelopment Projects

Revise the thresholds to comply with the Phase I Permit (Appendix 1) thresholds. Projects that exceed 2,000 sf of new and replaced impervious surfaces are not exempt from the requirement to apply flow control BMPs. New pervious surface between 7,000 and 35,000 sf must meet the soil quality and depth BMP.

Transportation Redevelopment Project Exemption

New pervious surface between 7,000 and 35,000 sf must meet the soil quality and depth BMP, where applicable. Note that the soil quality and depth BMP may not be applicable to all roadway projects; it is not necessary on engineered slopes

Area-Specific Flow Control Facility Requirement, Section 1.2.3.1

Direct Discharge Exemption

KC must provide adequate justification for exempting direct discharges to water bodies that have not been designated as "Flow Control-Exempt Surface Waters" by Ecology. The following paragraphs provide suggestions about the analyses needed for each subject water body in order to apply the direct discharge exemptions. Where referenced, the analyses should be in accordance with "Discharge of Stormwater to High Order Streams – Determining Exempt Reaches" (April 2004), which is available at the following website: http://www.wsdot.wa.gov/NR/rdonlyres/206A4E42-9151-4599-AC4A-4CDC486EEDE9/0/SW_ExemptReachesEvaluation0404.pdf.

- **Tolt River:** The entire or most of the basin was probably disqualified in Ecology's original analysis because it is under the 100 mile criterion. If KC wishes to pursue the direct discharge exemption for the Tolt River, KC would have to make an argument based upon: the stream order (3^{rd}, 4^{th}, or 5^{th} based upon 1:24,000 scale maps) at the furthest east rural/forest production zone boundary, an estimate of the maximum impervious area that could be built within ¼ mile of the floodplain, and an estimate of the maximum cleared area (based upon the rural clearing restrictions) that could occur within the rural area. In order to do this, some coordination with the City of Carnation is necessary. Then add the impervious and cleared areas based upon maximum build out. The totals of effective impervious area and converted forest areas could then be entered into the LCC equation used to predict stability (see "Discharge of Stormwater to High Order Streams." Note that this document includes an assumption of 0.5% EIA for forested areas in timber production, and 0%EIA for "reserve areas.") The result will be significantly under the 55.4 LCC criterion. That quantity will be considered in combination with the stream order.

- **North Fork of the Snoqualmie:** This exceeds the 100 mile criterion and, based upon information provided by KC, will have a very low LCC value. However, the issue that needs resolution is whether there is potential for land cover conversions in rural areas higher up in the watershed. If the only area outside of the Forest Production Zone is the area shown at the bottom of the watershed (about 2 miles long) in the county's "Water Quality Applications Map," then KC's exemption is acceptable. Verify the location of areas outside of the Forest Production Zone and submit the information to Ecology if you wish to pursue this direct discharge exemption.

- **South Fork of the Snoqualmie River:** This is below the 100 mile criterion. KC will need to do an analysis similar to that outlined above for the Tolt River if you wish to pursue this direct discharge exemption. A consultation with North Bend will be necessary to get estimates of their maximum EIA and forest conversions.

- **Justification for the lack of an upstream boundary for exemptions on the Cedar, White, and South Fork of the Skykomish.** If there is only Forest Production zoning above Ecology's upper geographic limit for an exemption, these KC exemptions are acceptable. If there are other zoning categories upgradient of the Ecology upper limits, they will need further justification using analyses similar to those described above for the Tolt River.

- **Green River:** The Green River exemption is more difficult to justify. The Green River, above the turning basin, does not appear on Ecology's direct exemption list because the extent of land conversion in the lower watershed pushes it above the 55.4 LCC value. If KC wants to pursue a direct discharge exemption based upon the LCC equation, it will have to provide the maximum land cover conversion total for areas that it wants to include in the exemption. Such an analysis must also include land cover conversion totals for areas that other local governments also want exempted. Because KC does not control stormwater decisions within the incorporated areas, it cannot unilaterally provide such an analysis.

The County may wish to pursue direct discharge exemptions based upon other rationales. Other potential rationales include those identified by the above-referenced document. Additionally, the Middle Fork of the Snoqualmie is already exempted by Ecology downstream of the confluence with Rainy Creek. KC has indicated that the land area upgradient of Rainy Creek is in National Forest. Therefore, the KCSWDM direct discharge exemption for the Middle Fork of the Snoqualmie is approved.

Basic Flow Control Areas

Flow Control Applications Map, Target Surfaces, Exceptions

Salmon Creek: To gain Ecology's approval to use a Basic Flow Control Standard for Salmon Creek, KC and its partners must submit the basin plan for Ecology's review. The plan must include a flow control strategy that is compatible with selected natural resource goals. Those goals must also be approved by the state natural resource agencies. Because the Salmon Creek basin includes land within the jurisdiction of other municipalities, KC

must provide documentation that those entities have concurred with the flow control strategy. Ecology will review the plan for:

1) Evidence that the bypass line has sufficient capacity to allow use of the Basic Flow Control standard;
2) An adequate basis for using the Basic Standard for the area draining to the creek
3) The compatibility of the above flow strategies with protection of the beneficial uses of the creek. Because the bypass line removes flow from a perennial creek, the county should not assume that it is approvable outside of the context of a basin plan that intends to protect beneficial uses.

Other Basins: The text in regard to target surfaces and the exceptions are all potentially approvable within the context of the Salmon Creek Basin Plan. However, their acceptability for any other area that proposes to apply a Basic Flow Control Standard must be based upon studies specific to those basins. Because other local governments use the KCSWDM extensively and may adopt it to meet Municipal Stormwater NPDES Permit requirements, the KCSWDM must include a clarifying statement within the text of the section for Basic Flow Control Areas indicating that these provisions are basin-specific. Other local governments should not assume that these provisions will automatically apply to any area that they propose for Basic Flow Control.

Other situations: Ecology understands that KC also uses the term "basic flow control" to refer to areas that discharge to closed pipes which discharge eventually to water bodies that do not need flow control. Clarifying text should be added to the KCSWDM (page 1-31, Section A, first paragraph) that describes these locations and why they are not associated with a basin plan.

Conservation Flow Control Areas:

Exceptions

In **exceptions 1a and 3,** clarify that any County-approved plan would also need approval from Ecology in accordance with the Phase I Municipal Stormwater Permit Appendix 1, Section 7, *Basin/Watershed Planning*.

Exception 1b is not equivalent to the required flow control criteria. Revise the KCSWDM to be consistent with the requirements outlined in *Standard Flow Control Requirement and Western Washington Alternative Requirement* (Phase I Permit, Appendix 1, page 25).

Exception 5 to the flow control requirements constitutes a jurisdiction-wide exception (Appendix 1, Section 6). The exception, as currently written, is not approvable because exceeding one of the cost criteria relieves the project completely of the application of flow control to the replaced impervious surfaces. Ecology would approve use of the cost criteria if they were applied as a stop-loss provision (e.g., the project would be obligated to spend up to those limits, but no more). Additionally, since the existing wording of the exception leaves unclear whether the criteria apply to the cost of flow control for the whole project (e.g., new plus replaced impervious surfaces), or just to the cost of providing flow control to the replaced impervious surfaces, KC could make the intent clearer.

Sizing Credits for Fully Dispersed Surfaces, Section 1.2.3.2.C

Requirement #3e references minimum spacing requirements in Appendix C, Section C2.2. The reference should be to Section C2.1 – Full Dispersion.

Core Requirement #5: Erosion and Sediment Control, Section 1.2.5

ESC Performance (Section 1.2.5.2.A and D.4.1)

KC has indicated that they will change the provisions in Criteria #1 to make them consistent with the benchmark concept used in the General Construction Stormwater NPDES permit.

Alternative and Experimental Measures (Section 1.2.5.2.D and D.4.4)

This section will refer to the CTAPE process and identify that Ecology's approval is also necessary.

Core Requirement #8: Water Quality, Section 1.2.8

Standard Infiltration Exemption (Exemption 4) and
Soil Treatment Exemption (Exemption 5)

Revise the criteria as follows:

The soil shall meet a minimum of 5 milliequivalents CEC/100 gms dry soil
AND EITHER
Achieve the soil gradation requirement currently listed in Exemption 5b of the KCSWDM,
OR
Have a measured initial infiltration rate of 9 inches per hour or less.

Area-Specific Water Quality Facility Requirements, Section 1.2.8.1

Basic Water Quality Treatment Areas, Section 1.2.8.1.A

Include a broader application of the enhanced treatment BMP menu. Enhanced treatment is required of commercial developments that are likely to include activities and materials that generate higher concentrations of metals. Commercial sites with high vehicle turnover are not the only types of commercial sites that would have higher metals concentrations in stormwater runoff.

The KCSWDM provisions will be amended to reflect one of the following approaches:

1. Require Enhanced Basic Treatment at all commercial development;
2. Broaden the enhanced treatment menu to types of commercial and industrial developments that are likely to include activities and materials that generate higher concentrations of metals; or
3. Add a requirement for new commercial developments to sign a covenant (or other enforceable document) that it will not use galvanized products in areas exposed to the weather.

Water Quality Implementation Requirements, Section 1.2.8.2

Use of Experimental Water Quality Facilities, Section 1.2.8.2.E

The KCSWDM must indicate that new treatment technologies must be approved (at some use-level designation) through Ecology's TAPE program before the technology can be approved by KC.

Special Requirement #4: Source Controls, Section 1.3.4

Stormwater Pollution Prevention Manual

Revise the Stormwater Pollution Prevention Manual (SPPM) to explicitly include BMPs in the following subject areas:

- Dust Control at Manufacturing Areas
- Soil Erosion and Sediment Control at Industrial Areas
- Maintenance of Private Utility Corridors and Facilities

The SPPM needs additional guidance in the following subject areas:

- Loading and Unloading Areas for Liquid or Solid Material
- Maintenance and Repair of Vehicles and Equipment

Adjustment Process, Section 1.4

Part of the adjustment process described on page 1-78 of the KCSWDM meets the requirements in the Phase I Municipal Stormwater Permit Appendix 1, Section 5. However, the paragraph that begins "Where it has been demonstrated that meeting the criteria for producing a compensating or comparable result..." describes the situation intended to be addressed by the variance requirements described in Appendix 1, Section 6. The legal public notice requirement associated with a variance application is intended to be an opportunity for members of the public to provide information not already evaluated and/or request that the decision be revisited. KC must revise the KCSWDM to incorporate the variance procedures and criteria per Appendix 1, Section 6 of the municipal stormwater permit.

CHAPTER 3: HYDROLOGIC ANALYSIS AND DESIGN

General Hydrologic Design Process, Section 3.3.1

Step 5 incorrectly refers to "existing conditions" and should refer to the "predeveloped" conditions required to be assumed per the applicable area-specific flow control facility requirement in Core Requirement #3. Additional clarification is needed in Step 8 regarding existing conditions versus assumed predeveloped conditions in determining Core 1 discharge requirements, Core 3 exemptions/exceptions from the flow control facility requirement, and Core 3 implementation requirements.

Flow Control Design with KCRTS, Section 3.3.2

Evaluating Flow Control Performance

Amend the KCRTS flow control compliance standard to indicate that no excursions above the target flow duration curve are allowed between 50% of the 2-year flow through the 2-year flow.

CHAPTER 6: WATER QUALITY DESIGN

High Use Menu, Section 6.1.5

Oil Control Option 6 allows quarterly washing of a parking lot in lieu of an oil removal treatment system. Ecology will consider lot washing an acceptable option if the county amends the SWDM to require submission of a Wash Plan. The SWDM, or a separate guidance document, should indicate the minimum requirements for a Wash Plan. A Wash Plan must include collection and disposal of wash water, and recordkeeping.

General Requirements, Section 6.2

Emerging Technologies

Treatment technologies must receive Ecology approval for use. An acceptable modification the KCSWDM language could read as follows: "Technologies not described in this manual must be reviewed through an Experimental Design Adjustment per Section 1.4. Emerging treatment technologies must also receive approval through the Washington Department of Ecology's evaluation process. Please refer to the Dept. of Ecology's stormwater website: http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html"

Section 6.2.1 Water Quality Design Flows

The County may choose to either add references to a required rainfall distribution (Type 1A) and a 10-minute time step, OR eliminate the use of SBUH. If the County chooses to retain the option of using the SBUH model for estimating water quality design flows (used for biofiltration swales and vegetated filter strips), the text must indicate use of 72% of the 2-year, 24-hour storm.

APPENDIX A: MAINTENANCE REQUIREMENTS

No. 1 – Detention Ponds

Under *Contaminants and Pollution*, remove the 1 gallon threshold.
Under *Tree Growth*, add "not" before "a threat ....."

No. 18 (or 24) – Catch Basin Inserts

Add the maintenance trigger of a visible oil sheen passing through the media.

APPENDIX D: EROSION AND SEDIMENTATION CONTROL STANDARDS

ESC Measures, Section D.3

Appendix D includes a number of references to 2-year and 10-year storm events for sizing facilities. A complete reference would also include the length of the storm event (24 hours). Add this information to each reference.

Stabilized Construction Entrance, Section D.3.4.1

Add a statement that access and exit shall be limited to one route, if possible, or two for linear projects such as roadways where more than one access is necessary for large equipment maneuvering.

Change statement #3 under maintenance standards to more specifically indicate that street wash wastewater must be controlled by pumping back on-site, or otherwise be prevented from discharging into systems tributary to state surface waters.

Sediment Retention, Section D.3.5

Add a statement that BMP's intended to trap sediment on-site shall be located in a manner to avoid interference with the movement of juvenile salmonids attempting to enter off-channel areas or drainages.

The introductory paragraph of Section D.3.5 indicates that "at the County's discretion, sites may be worked during the dry season without sediment ponds and traps if there is some other form of protection of surface waters..." When this is allowed, we suggest you require the responsible party to identify a back-up plan in their SWPPP if the site remains active into the wet season.

Dewatering Control, Section D.3.7

Add statements similar to the following:

- Clean, non-turbid de-watering water, such as well-point ground water, can be discharged to systems tributary to, or directly into surface waters of the state provided the de-watering flow does not cause erosion or flooding of receiving waters. Clean de-watering water should not be routed through a stormwater sediment pond.
- Highly turbid or contaminated de-watering water shall be handled separately from stormwater.

ESC Performance, Section D.4.1

The County's criterion for turbidity increases that trigger corrective action do not align with the State's water quality standards. Options to resolve the discrepancy are:

1) Change the text to read: "A discharge to any onsite or offsite receiving waters (e.g., surface water flows, ditches, wetlands, streams, lakes, etc.) cannot increase background turbidity by more than 5 NTU's if the background in the receiving water

is less than 50 NTU's. The discharge cannot increase background turbidity by more than 10% if the background in the receiving surface water is 50 NTU's or more."

2) Change the text to read: "A discharge shall not cause or contribute to a violation of water quality standards."
3) Add the following statement to Section 1.1.4 Drainage Design Beyond Minimum Compliance: "It is also the responsibility of the property owner to ensure that the discharge from their property is not in violation of state and federal laws." By adding the statement in this section, the requirement would cover the entire manual, not just Core Requirement # 5, Erosion and Sediment Control.

Also, the County's criterion of 25 NTU's for storm and surface water discharges from onsite activity areas seems consistent with Ecology's benchmark value of 25 NTU's in the Construction Stormwater General Permit. It may reduce potential confusion to eliminate the words "and surface" from the above sentence.

NPDES Requirements, Section D.5.6

Ecology appreciates the County's inclusion of information regarding the Construction Stormwater General NPDES Permit within Appendix D. To make the information more accurate, clarify that it also applies to projects disturbing less than one acre that are part of a larger *common plan of development or sale*. Adding a definition for "common plan of development or sale" would also assist project applicants. The definition could be added as a footnote. Ecology suggests that KC use the same Ecology and EPA definitions and informal policy regarding common plans of development or sale; this information has been provided to KC.

Erosion and Sediment Control Plans, Section D.6

Include timeframes for making changes to the SWPPP and for implementing the changes at the site consistent with the Construction Stormwater General NPDES permit. The timeframes are as follows:

- Changes in the SWPPP within 7 days of inspections or investigations
- Implementation of changes within 10 days, and
- If installation of necessary treatment BMPs is not feasible within 10 days, an extension may be granted if the extension is requested within the initial 10-day response period.

Small Site ESC, Section D.7

Lower the small site and small project thresholds from 3 acres to 1 acre and require Targeted Drainage Review for projects between 1 acre and 3 acres.

A provision in Appendix 1 (pg. 13) of the Phase I Permit states that all of the indicated Construction Stormwater Pollution Prevention Plan (SWPPP) Elements apply to a regulated site "unless site conditions render the element unnecessary and the exemption from that element is clearly justified in the SWPPP." Thus, revise the KCSWDM Small Site ESC approach to include BMPs in the following topic areas:

- Maximum time frames for covering exposed, unworked soils

- Specifications for pipe slope drains and other measures to protect slopes
- Specifications for protection of storm drain inlets
- Specifications for temporary on-site conveyance channels
- Requirements in regard to control of pollutants other than sediments
- De-watering requirements

Additionally, indicate that a CESCL is required (refer to Appendix 1 page 18) for projects that will disturb 1 acre or more, and for smaller projects that are part of a larger common plan of development or sale of 1 acre or more.